

ABSTRACT OF THE DISCLOSURE

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5 A speech coding apparatus includes a spectrum  
parameter calculation section, an adaptive codebook  
section, a sound source quantization section, a  
discrimination section, and a multiplexer section. The  
spectrum parameter calculation section receives a speech  
signal and quantizes a spectrum parameter. The adaptive  
codebook section obtains a delay and a gain from a past  
10 quantized sound source signal using an adaptive codebook,  
and obtains a residue by predicting a speech signal. The  
sound source quantization section quantizes a sound source  
signal using the spectrum parameter. The discrimination  
section discriminates the mode. The sound source  
15 quantization section has a codebook for representing a  
sound source signal by a combination of non-zero pulses  
and collectively quantizing amplitudes or polarities of  
the pulses in a predetermined mode, and searches  
combinations of code vectors and shift amounts used to  
20 shift the positions of the pulses to output a combination  
of a code vector and shift amount which minimizes  
distortion relative to input speech. The multiplexer  
section outputs a combination of outputs from the spectrum  
parameter calculation section, the adaptive codebook  
25 section, and the sound source quantization section.

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